This is Libraries_and_Searching.doc. It contains some notes on using the literature, in the context of the PSM in Nanoscience degree program, and NAN 591: Professional Seminar.
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Introduction: One of the great strengths of ASU is the geographical layout of the science and engineering departments and facilities, very close to the Noble Science Library. This is very well stocked with general and specialist books, and scientific journals, as well as other types of media.

So the first message is: "***Use it or lose it...***" It is a huge resource, and establishing good habits early on is very valuable. The library home page is at http://lib.asu.edu/ Take time to find your way around the library web pages, and visit in person to see what is actually on the shelves.

Specific facilities that you may find useful:

1) Reserve Collection: Some course Professors put relevant library material into the Reserve Collection at http://lib.asu.edu/access/reserves/students. This means that you don't have to buy every book that is mentioned as a reference (try to imagine how expensive that would be). But, that doesn't mean that the selected reading should be ignored. At present, there are apparently no entries under the NAN course label. However, many of the NAN courses are cross listed with other labels such as PHY, so find out which courses do have material in the Reserve Collection.

- What courses did you find?

If you think such reserves should be available for any of your courses, persuade your professor to put the corresponding books on reserve. Work in small groups in order to use these reserve books efficiently. Be careful about overnight borrowing: if the book is not back by 8 am the next day, you will be fined...

2) Shelf Collection: It is great to borrow these books if you can find them. But save a wasted journey, by checking online first whether it is on the shelf or already borrowed. You can request it online also, but think whether you really will still need it when it arrives (~ two weeks later?). It may well be that someone else in the same class already has it out, so by posing a question to the class you can check this, and arrange to share.

3) Journals and e-journals: Preparing for a talk always needs some access to journals, and I propose to explore specific papers with you individually in preparation for your seminar talks later in the semester. For a specific article, e.g. in Science, Physical Review Letters, Nature Materials, ACS Nano, JACS, etc you can first search the library pages for **print journals**

- Which journals did you find by this method?

For journals that you can't find this way, you can try **electronic journals**

- Which journals did you find by this method?

For other journals, don't give up, but try something different. For example, what does ACS stand for? Can you do a search for the words corresponding to AC? What do you find? Do any of the above journals appear, and can you access the papers in these journals?

Let's try to build up a list of journals that you may wish to consult for articles in physics, chemistry, electrical engineering, nanoscience and nanotechnology, and then share this list.

4) Searching methods: Searching for articles is now usually done online using a Research Database, such as ISI Web of Knowledge, also known as **Web of Science®**. The most useful Database depends on the field. For example, WoS works very well for me, as a Physics/ Chemistry/ Materials person; other people prefer **Google Scholar**.

They don't all cover similar types of publication, so a bit of experimentation is a good idea. When I have done this I found WoS to be more complete (more citations found) than Google Scholar, but WoS doesn't include books. In Medicine and Biochemistry, people use **Medline®** exclusively. This can be accessed via **PubMed**, and there are tutorials to help you get started. Then there is the whole question of **Patent literature**, and one of our students this year is already a Patent Lawyer, so we should tap into his expertise.

All of these can be located on the Web using Google, but that doesn't allow you to download what you find. For that you have to logon via the ASU Library site at http://lib.asu.edu/ and choose the **Research Databases** tab under the **Articles** tab on the left-hand menu... Those web sites that you need to revisit many times should be bookmarked.

5) Specific Searches: We will do some specific searches using **Web of Science®**, and **Google Scholar**, and you can do some for yourself as practice, using whichever Database you like. I plan to give out **some individual articles**, related to Nanoscience/ Nanotechnology and to the courses that you are currently attending. This way you will get some feel both for the business of searching, and for the subject matter. *You are not expected to understand all the material in the papers*, but I think you will be amazed how much you start to understand once we start sharing the information amongst ourselves, in subsequent classes.

The types of search that you should explore, using your particular article, are:

- Search the Library pages for the journal, obtain online access to the journal and download the article. Once you have a copy, you should return the paper copy to me;
- Search the WoS for both the first Author and the last Author, using Last Name, two initials as the search term, as in Venables JA or Mujica V*, (if you want to know what research the two of us do, * being a wild card). Find out who seems to be the "senior author" for your assigned paper; what criteria are you using to establish this?
- List these searches in Latest Date order (Default) and then Times Cited order. Using the latter order, think about whether the author can be considered "successful" or not... What parameters are in play in making such a statement, and is your judgment "fair"?
- Find out how many citations your assigned paper has obtained, and see what the most recent papers that cite this paper are. Take a copy of any such recent paper that appears to be interesting to you, or which would be useful in finding out where the field had gone since the publication of "your" paper.
- Prepare to share the above information when we discuss what we have found in class.